Kramer Electronics, Ltd.

USER MANUAL

Models:

SL-14RC, ***Master Controller***

RC-3TB, ***Remote Control Panel (Optional)***

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1 Introduction

Welcome to Kramer Electronics! Since 1981, Kramer Electronics has been providing a world of unique, creative, and affordable solutions to the vast range of problems that confront the video, audio, presentation, and broadcasting professional on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better! Our 1,000-plus different models now appear in 11 groups[1] that are clearly defined by function.

Thank you for purchasing the Kramer **SL-14RC** *Master Controller*, which is ideal for controlling multimedia rooms, such as classrooms, auditoriums, conference rooms, and so on, while enabling remote control and management of the AV equipment

Each package includes the following items:

- The **SL-14RC** *Master Controller*
- Kramer **K-Config** software[2]
- Power cord, rack "ears" and this user manual[3]

Optional component:

- **RC-3TB** *Remote Control Panel*

2 Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual
- Use Kramer high-performance high-resolution cables[4]

1 GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Matrix Switchers; GROUP 3: Control Systems; GROUP 4: Format/Standards Converters; GROUP 5: Range Extenders and Repeaters; GROUP 6: Specialty AV Products; GROUP 7: Scan Converters and Scalers; GROUP 8: Cables and Connectors; GROUP 9: Room Connectivity; GROUP 10: Accessories and Rack Adapters; GROUP 11: Sierra Products

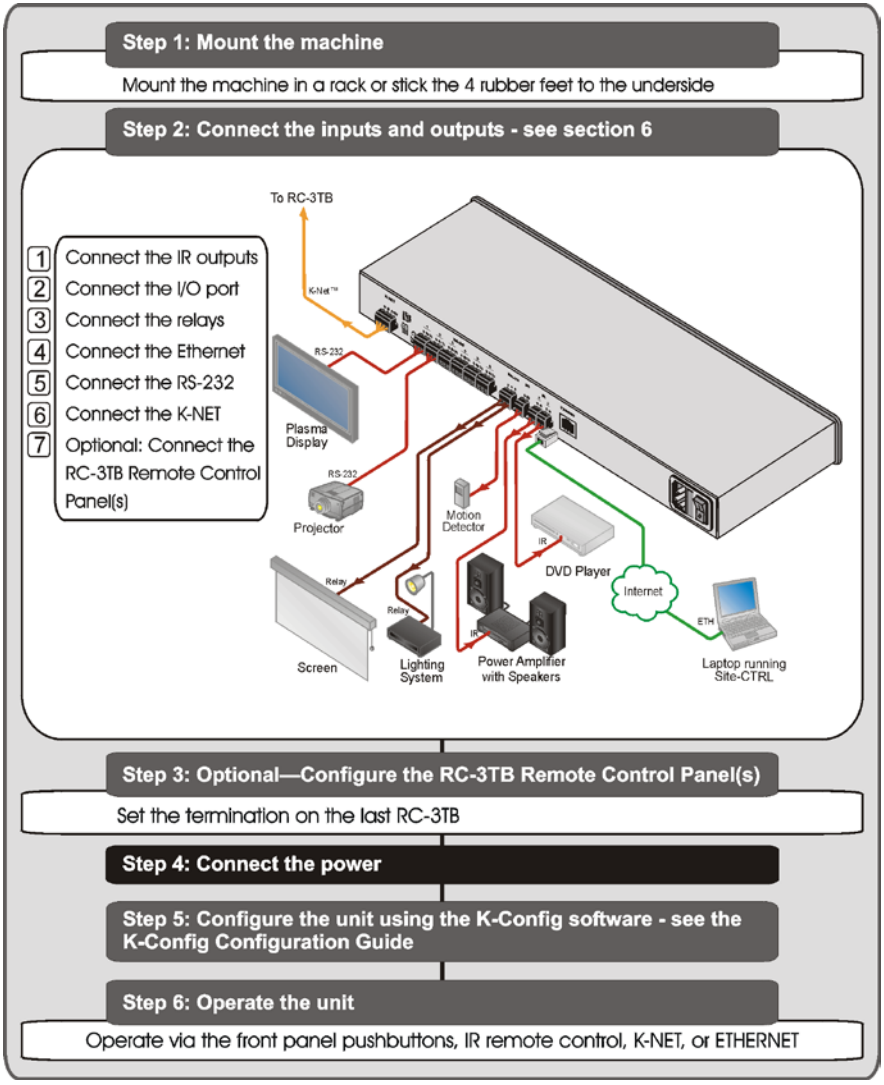
2 The latest version of the K-Config software is available from http://www.kramerelectronics.com

3 Download up-to-date Kramer user manuals from http://www.kramerelectronics.com

4 The complete list of Kramer cables is on http://www.kramerelectronics.com

2.1 Quick Start

The following quick start chart summarizes the basic setup and operation steps.


Step 1: Mount the machine
Mount the machine in a rack or stick the 4 rubber feet to the underside
Step 2: Connect the inputs and outputs - see section 6
1 Connect the IR outputs
2 Connect the I/O port
3 Connect the relays
4 Connect the Ethernet
5 Connect the RS-232
6 Connect the K-NET
7 Optional: Connect the RC-3TB Remote Control Panel(s)
To RC-3TB
K-Net™
RS-232
Plasma Display
RS-232
Projector
Motion Detector
IR
DVD Player
Internet
ETH
Laptop running Site-CTRL
Relay
Relay
Screen
Lighting System
IR
Power Amplifier with Speakers
Step 3: Optional—Configure the RC-3TB Remote Control Panel(s)
Set the termination on the last RC-3TB
Step 4: Connect the power
Step 5: Configure the unit using the K-Config software - see the K-Config Configuration Guide
Step 6: Operate the unit
Operate via the front panel pushbuttons, IR remote control, K-NET, or ETHERNET

3 Overview

The **SL-14RC** is a highly versatile master room controller that acts as an all-in-one extended remote control panel for control of A/V equipment—especially projectors and associated equipment—in any room (such as classrooms, boardrooms, or auditoriums). It streamlines operations and simplifies control by integrating audio, video, and computer-video sources into a centralized system. Optional 3-button remote control panels are available which enable you to remotely duplicate the functionality of front panel buttons.

The **SL-14RC** *Master Controller* features:

- 12 configurable front panel buttons (configured using the **K-Config** Configuration software[1])
- 1 configurable rotary up/down controller with direction indicator LEDs (configured using the **K-Config Configuration** software)
- 1 general purpose I/O port that can be configured as an analog input, digital input, or digital output for interfacing with a variety of devices such as sensors, switches, LEDs, and relays
- 6 bi-directional RS-232 ports that can control AV equipment such as projectors, LCD and PDP displays, power amplifiers, switchers and scalers
- 2 relay contacts that can control other room items related to the AV system, such as, raising and lowering drapes, screen or projector
- IR control on 2 outputs (terminal blocks)
- IR Learning that learns commands from any IR remote
- Compatibility with Kramer **Site-CTRL** software for network remote control and management over the Ethernet port
- A **K-NET™** control channel that connects compatible user interfaces and supplies power and control data over a single cable
- Flexible control via Ethernet and **K-NET**

To achieve the best performance:

- Use only good quality connection cables[1]
- Position your Kramer **SL-14RC** away from moisture, excessive sunlight and dust

1 Available from Kramer Electronics on our Web site at http://www.kramerelectronics.com

4 Defining the SL-14RC Master Controller

Figure 1 and Table 1 define the front panel of the **SL-14RC**.

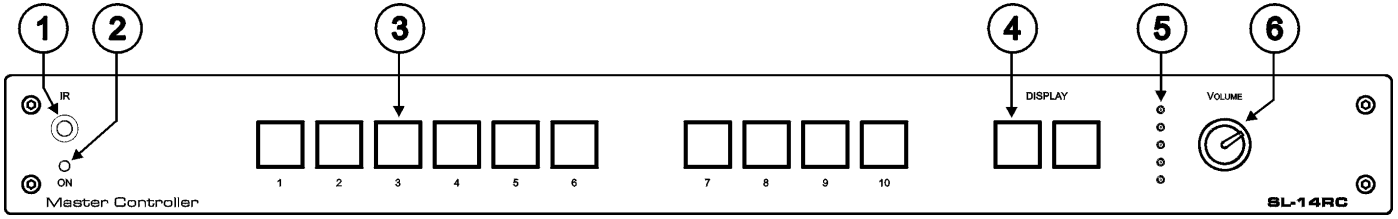


Figure 1: SL-14RC Master Controller Front Panel

Table 1: SL-14RC Master Controller Front Panel Features

#	Feature	Function
1	*IR* Receiver	Accepts IR control
2	*ON* LED	Lights when the SL-14RC is switched on
3	Configurable Button Switches 1-10	Function is programmed by the K-Config Configuration software
4	*DISPLAY* Configurable Button switches 11 and 12	Function is programmed by the K-Config Configuration software
5	Rotary switch up/down LED indicator	Indicates the direction of travel of the rotary switch
6	*VOLUME* Rotary Switch	Function is programmed by the K-Config Configuration software

Figure 2 and Table 2 define the rear panel of the **SL-14RC**.

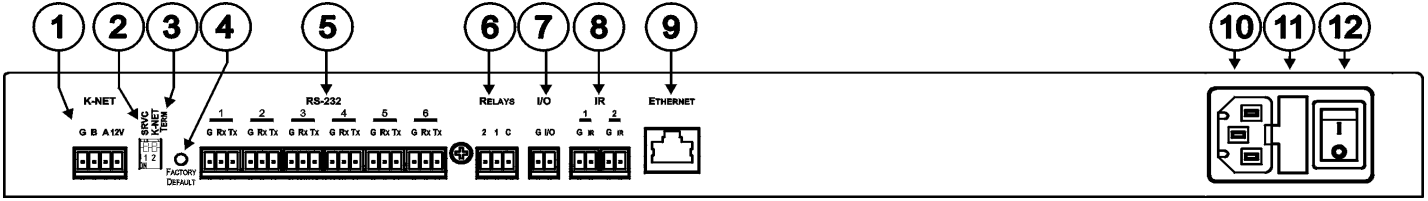


Figure 2: SL-14RC Master Controller Rear Panel

Table 2: SL-14RC Master Controller Rear Panel Features

#	Feature	Function
1	*K-NET*[1] Connector	Connect the GND pin to the Ground connection[2]; pin B (-) and pin A (+) are for RS-485, and the +12V pin is for powering the unit
2	*SRVC* Switch	For service use only
3	*K-NET TERM* Switch	Slides down for K-NET termination, slides up for not terminated
4	*FACTORY DEFAULT* Button[3]	Press to reset to factory default definitions (see Section 10)
5	*RS-232* Terminal Blocks	Connect to the RS-232 devices (from 1 to 6)
6	*RELAYS* Terminal Blocks	Connect to low-voltage relay-driven devices (from 1 to 2)
7	*I/O* Terminal Block	Connect to various analog and digital sensors
8	*IR* Output Terminal Blocks	Connect to IR emitter cables (from 1 to 2)
9	*ETHERNET* RJ-45 Connector	Connects to the PC or other serial controller through computer LAN
10	Mains Power Receptacle	Connects to mains power
11	Mains Power Fuse	Fuse holder for overload protection
12	Power ON/OFF Switch	Illuminated switch for turning the unit on and off

1 K-NET™ is a proprietary Kramer protocol for interconnecting Kramer units

2 The ground connection is sometimes connected to the shield of the RS-485 cable (in most applications, it is not connected)

3 First switch off the unit and then switch it on while pressing the DEFAULT button. The unit powers up and loads its memory with the factory default definitions and erases all stored presets

5 Defining the RC-3TB Remote Control Panel (Optional)

Figure 3 and Table 3 define the **SL-14RC**.

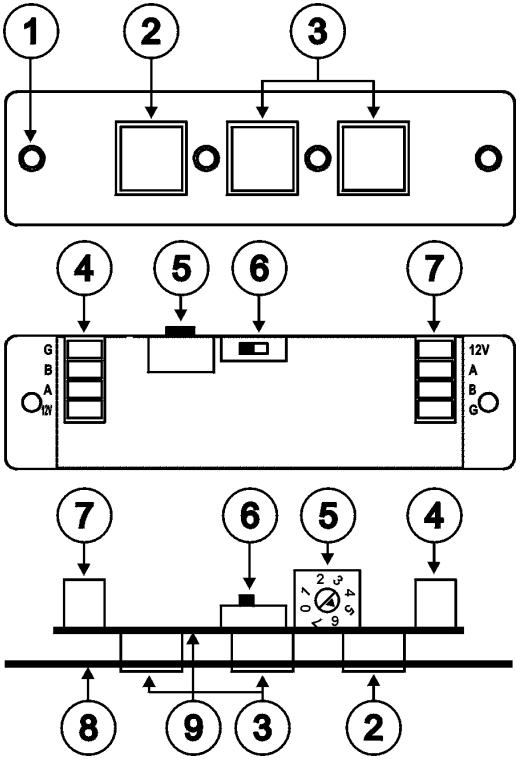


Figure 3: RC-3TB Remote Control Panel Components

Table 3: RC-3TB Remote Control Panel Functions

#	Feature	Function
1	Mounting Holes	2 holes for mounting the RC-3TB to the PTBUS-3 or TBUS-6W
2	Button 1	Function is always assigned to button 12 on SL-14RC
3	Buttons 2 and 3	Function is assigned by the rotary switch position (see Table 4)
4	K-NET Connector	Connects to either SL-14RC or additional RC-3TB
5	8 Position Rotary Switch	For assigning which buttons on the SL-14RC are emulated by the buttons on the RC-3TB (see Table 4)
6	K-NET Termination Switch	Terminates the K-NET to RC-3TB daisy-chain
7	K-NET Connector	Connects to either SL-14RC or additional RC-3TB
8	Front Panel	For mounting the RC-3TB
9	Printed Circuit Board	Contains the components of the RC-3TB

Button 1 is always assigned to the second DISPLAY button (button number 12) on the **SL-14RC**. The position of the rotary switch (see Table 4) determines which of the 12 buttons on the **SL-14RC** are emulated by buttons 2 and 3 on the **RC-3TB**.

Table 4: RC-3TB Rotary Switch Button Assignment

Rotary Switch Position	Button 1	Button 2	Button 3
0	12	7	8
1	12	7	9
2	12	7	10
3	12	8	9
4	12	8	10
5	12	9	10
6	12	7	9
7	Service use only		

For example, if the rotary switch is in position 4, the 3 buttons on the **RC-3TB** will duplicate the functions of buttons 12, 8, and 10 on the **SL-14RC**. That is, in this example, pressing button 1 on the **RC-3TB** has the same effect as pressing button 12 on the **SL-14RC**, pressing button 2 on the **RC-3TB** has the same effect as pressing button 8 on the **SL-14RC**, and pressing button 3 on the **RC-3TB** has the same effect as pressing button 10 on the **SL-14RC**.

Note: The rotary switch configuration is only read at switch on. Therefore, when changing the rotary switch position, you must switch off the **SL-14RC** and then switch it on again for the new settings to take effect.

For connecting the **RC-3TB**, see Section 7.3.

6 Installing the SL-14RC in a Rack

This section provides instruction on rack mounting the **SL-14RC**.

Before Installing in a Rack

Before installing in a rack, be sure that the environment is within the recommended range:

Operating temperature range	+5° to +45° C (41° to 113° F)
Operating humidity range	10 to 90% RHL, non-condensing
Storage temperature range	-20° to +70° C (-4° to 158° F)
Storage humidity range	5 to 95% RHL, non-condensing

CAUTION!

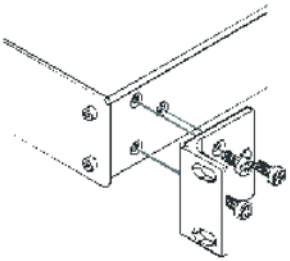
When installing on a 19" rack, avoid hazards by taking care that:

1. It is located within the recommended environmental conditions, as the operating ambient temperature of a closed or multi unit rack assembly may exceed the room ambient temperature.
2. Once rack mounted, enough air will still flow around the machine.
3. The machine is placed straight in the correct horizontal position.
4. You do not overload the circuit(s). When connecting the machine to the supply circuit, overloading the circuits might have a detrimental effect on overcurrent protection and supply wiring. Refer to the appropriate nameplate ratings for information. For example, for fuse replacement, see the value printed on the product label.
5. The machine is earthed (grounded) in a reliable way and is connected only to an electricity socket with grounding. Pay particular attention to situations where electricity is supplied indirectly (when the power cord is not plugged directly into the socket in the wall), for example, when using an extension cable or a power strip, and that you use only the power cord that is supplied with the machine.

How to Rack Mount

To rack-mount a machine:

1. Attach both ear brackets to the machine. To do so, remove the screws from each side of the machine (3 on each side), and replace those screws through the ear brackets.



2. Place the ears of the machine against the rack rails, and insert the proper screws (not provided) through each of the four holes in the rack ears.

Note:

- In some models, the front panel may feature built-in rack ears
- Detachable rack ears can be removed for desktop use
- Always mount the machine in the rack before you attach any cables or connect the machine to the power
- If you are using a Kramer rack adapter kit (for a machine that is not 19"), see the Rack Adapters user manual for installation instructions (you can download it from http://www.kramerelectronics.com)

7 Connecting the SL-14RC Master Controller

To connect[1] the SL-14RC as shown in the example in Figure 4:

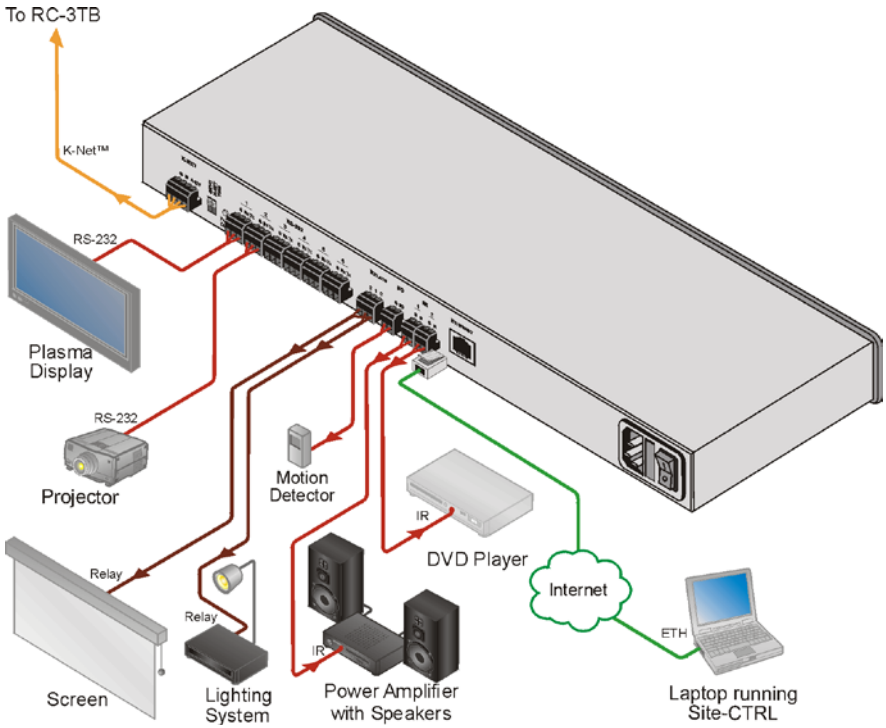


Figure 4: Connecting the SL-14RC Master Controller

1. Connect the RELAY terminal block connectors as follows:
   - Connect RELAY 1 to the lighting system
   - Connect RELAY 2 to the screen
2. Connect the I/O port to a motion detector.
3. Connect the IR outputs as follows:
   - Connect an IR emitter to IR OUTPUT 1 and attach the emitter to the DVD player
   - Connect an IR emitter to IR OUTPUT 2 and attach the emitter to the power amplifier
4. Connect the RS-232 ports (see Section 7.3) as follows:

1 Switch off the power on each device before connecting it to your SL-14RC. After connecting your SL-14RC, switch on its power and then switch on the power to each device

- Connect RS-232 port 1 to the projector
- Connect RS-232 port 3 to the plasma display

5. Connect the Ethernet port to a network.
6. Connect the **K-NET** port to the input of the first **RC-3TB** (see Section 7.3).
7. Connect the output of the first **RC-3TB** to the input of the second **RC-3TB** (see Section 7.3.1).

7.1 Connecting the RS-232 Interface

To connect an AV device to the **SL-14RC** using the RS-232 port, connect the RS-232 9-pin D-sub port on your AV device to the RS-232 terminal block on the rear panel of the **SL-14RC** as shown in Figure 5.

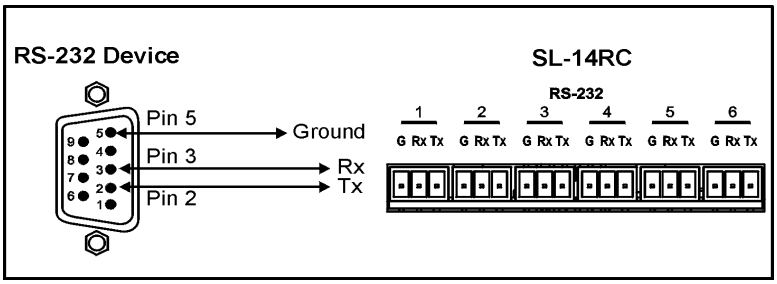


Figure 5: RS-232 Connection

7.2 Connecting the Ethernet Port

The Ethernet connection of the **SL-14RC** lets you perform all control functions of the **SL-14RC** over the Internet using a PC running the Kramer Site-CTRL control program.

To connect the **SL-14RC** to a network:

1. Connect the Ethernet port of the **SL-14RC** to the Ethernet port on a network hub or network router, via a straight cable with RJ-45 connectors.
2. At the other end, connect the Internet to a PC running **Site-CTRL**.
3. After connecting the Ethernet port, you have to install and configure it. For detailed instructions on how to install and configure your Ethernet port, see the *K-Config Software Guide* available from our Web site[1].

7.3 Connecting RC-3TB Remote Control Panels (Optional)

One or more **RC-3TB** panels may be connected to the **K-NET** port on the **SL-14RC** in a daisy-chain configuration.

The wiring from a **K-NET** port to a single **RC-3TB** is shown in Figure 6.

1 At http://www.kramerelectronics.com

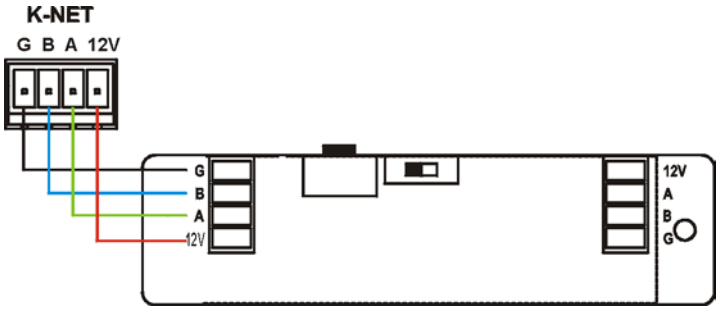


Figure 6: K-NET to RC-3TB Connection

7.3.1 Terminating RC-3TB Remote Control Panels

If only one **RC-3TB** is connected, it must be terminated and the termination on the **SL-14RC** is turned off (see Section 7.3.1). When viewed from above and the rotary switch is to the left of the termination switch, slide the termination switch to the left as shown in Figure 6.

Only the last **RC-3TB** in the chain should be terminated.

7.3.2 Daisy-chaining Multiple RC-3TB Remote Control Panels

The wiring of two **RC-3TB** panels to the **K-NET** port on the **SL-14RC** is shown in Figure 6. Connection of more than two **RC-3TB** panels follows the same principle.

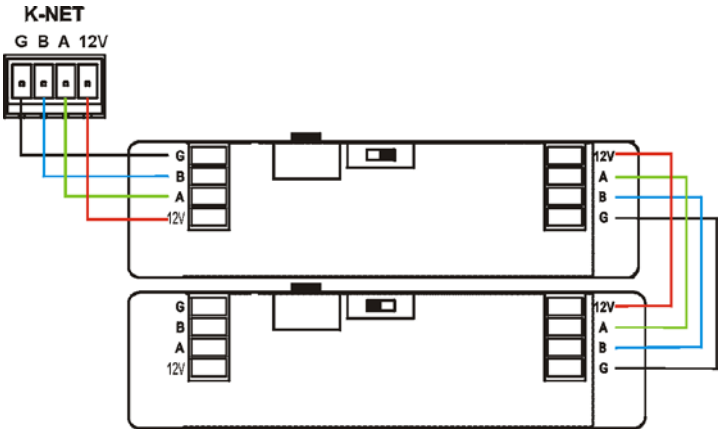


Figure 7: Daisy-chaining Multiple RC-3TB Panels

Note the position of the termination switch on the first **RC-3TB** (open, to the right), and that of the second **RC-3TB** (closed, to the left).

Connections to an **SL-14RC** or to another **RC-3TB** can be made to either connector block as the connector blocks are functionally identical.

8 Operating the SL-14RC Master Controller

You can operate your **SL-14RC** using:

- Front panel buttons. These are configured using the **K-Config s**oftware. For instructions on using the software, see the *K-Config Software Guide* available from our Web site[1]
- **RC-3TB** Remote Control Panels (optional)
- A PC running **Site-CTRL** control software:
  To operate your device using **Site-CTRL**, see the *Site-CTRL User Guide* available at the Kramer Web site[2]

9 Front Panel Button Caps and Labels

The **SL-14RC** is supplied with a button label sheet and 12 clear, button caps to house the labels. Figure 8 illustrates a sample button label sheet.

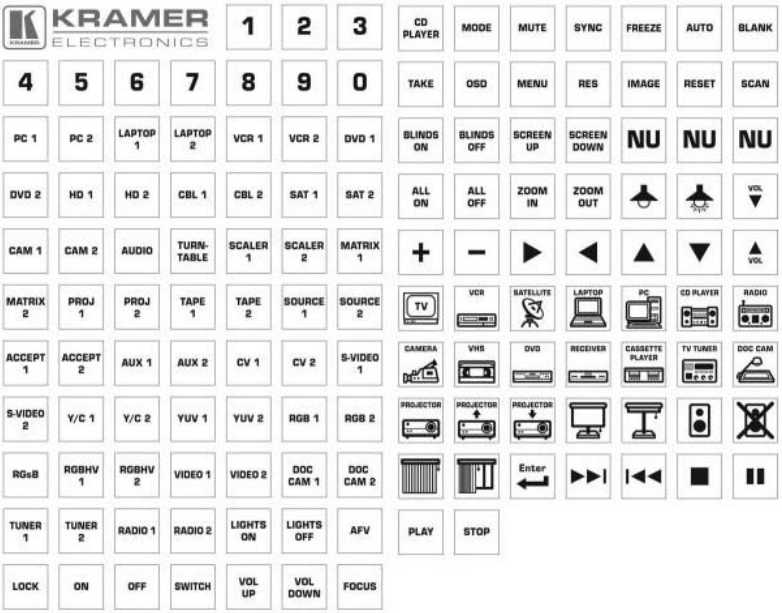

KRAMER
ELECTRONICS
1 2 3
CD PLAYER MODE MUTE SYNC FREEZE AUTO BLANK
4 5 6 7 8 9 0
TAKE OSD MENU RES IMAGE RESET SCAN
PC 1 PC 2 LAPTOP 1 LAPTOP 2 VCR 1 VCR 2 DVD 1
BLINDS ON BLINDS OFF SCREEN UP SCREEN DOWN NU NU NU
DVD 2 HD 1 HD 2 CBL 1 CBL 2 SAT 1 SAT 2
ALL ON ALL OFF ZOOM IN ZOOM OUT VOL
CAM 1 CAM 2 AUDIO TURN-TABLE SCALER 1 SCALER 2 MATRIX 1
VOL
MATRIX 2 PROJ 1 PROJ 2 TAPE 1 TAPE 2 SOURCE 1 SOURCE 2
TV VCR SATELLITE LAPTOP PC CD PLAYER RADIO
ACCEPT 1 ACCEPT 2 AUX 1 AUX 2 CV 1 CV 2 S-VIDEO 1
CAMERA VHS DVD RECEIVER CASSETTE PLAYER TV TUNER DOC CAM
S-VIDEO 2 Y/C 1 Y/C 2 YUV 1 YUV 2 RGB 1 RGB 2
PROJECTOR PROJECTOR PROJECTOR
RGsB RGBHV 1 RGBHV 2 VIDEO 1 VIDEO 2 DOC CAM 1 DOC CAM 2
Enter
TUNER 1 TUNER 2 RADIO 1 RADIO 2 LIGHTS ON LIGHTS OFF AFV
PLAY STOP
LOCK ON OFF SWITCH VOL UP VOL DOWN FOCUS

Figure 8: Sample Button Label Sheet

9.1 Installing the Front Panel Button Caps and Labels

To install the button caps and labels:

1. Remove the required labels from the supplied button label sheet.

1 www.kramerelectronics.com

2 Available in the near future

2. Remove the supplied button caps from the bag and insert the labels into the button caps.
3. Taking care that the button is oriented correctly, gently press the button cap on to the required button of the **SL-14RC**.
4. Repeat for all the button caps.

9.2 Replacing the Front Panel Button Labels

Note: The button caps are a press fit on the buttons and must be removed carefully or the buttons may be damaged. Remove the button caps only with the supplied button cap suction removal tool.

To replace the front panel button labels:

1. Using the supplied button cap suction removal tool, gently pull the button cap away from the button. Do not use excessive force.
2. Remove the required labels from the supplied button label sheet.
3. Remove the old label from inside the button and insert the new label into the button cap.
4. Taking care that the button is oriented correctly, gently press the button cap on to the button of the **SL-14RC**.

10 Technical Specifications

The **SL-14RC** technical specifications[1] are shown in Table 5.

Table 5: SL-14RC Master Controller Technical Specifications

INPUTS:	1 K-NET and 6 RS-232 on terminal block connectors 1 Ethernet on RJ-45 connector 1 infrared
OUTPUTS:	2 relays (36V AC or DC, 2A, 60VAC maximum on non-inductive load) 1 GPI/O 2 IR ports on terminal block connectors
DEFAULT IP SETTINGS	IP number – 192.168.1.39; Mask – 255.255.0.0; Gateway – 0.0.0.0
POWER SOURCE:	100-240VAC 22VA
DIMENSIONS	48.26cm x 11.5cm x 1U (19" x 4.5" x 1U) W, D, H
WEIGHT:	0.6kg (1.4lbs) approx.
ACCESSORIES:	Power cord, rack “ears” and K-Config Configuration Software
OPTIONS:	RC-3TB Remote Control Panel, IR emitter cables

The **RC-3TB** technical specifications[1] are shown in Table 6.

Table 6: RC-3TB Remote Control Panel Technical Specifications

DIMENSIONS	8.9cm x 2.1cm x 2.3cm (3.5" x 0.8" x 0.9”) W, D, H
WEIGHT:	0.1kg (0.22lbs) approx.

1 Specifications are subject to change without notice

LIMITED WARRANTY

Kramer Electronics (hereafter *Kramer*) warrants this product free from defects in material and workmanship under the following terms.

HOW LONG IS THE WARRANTY

Labor and parts are warranted for seven years from the date of the first customer purchase.

WHO IS PROTECTED?

Only the first purchase customer may enforce this warranty.

WHAT IS COVERED AND WHAT IS NOT COVERED

Except as below, this warranty covers all defects in material or workmanship in this product. The following are not covered by the warranty:

1. Any product which is not distributed by Kramer, or which is not purchased from an authorized Kramer dealer. If you are uncertain as to whether a dealer is authorized, please contact Kramer at one of the agents listed in the Web site www.kramerelectronics.com.
2. Any product, on which the serial number has been defaced, modified or removed, or on which the WARRANTY VOID IF TAMPERED sticker has been torn, reattached, removed or otherwise interfered with.
3. Damage, deterioration or malfunction resulting from:
   i) Accident, misuse, abuse, neglect, fire, water, lightning or other acts of nature
   ii) Product modification, or failure to follow instructions supplied with the product
   iii) Repair or attempted repair by anyone not authorized by Kramer
   iv) Any shipment of the product (claims must be presented to the carrier)
   v) Removal or installation of the product
   vi) Any other cause, which does not relate to a product defect
   vii) Cartons, equipment enclosures, cables or accessories used in conjunction with the product

WHAT WE WILL PAY FOR AND WHAT WE WILL NOT PAY FOR

We will pay labor and material expenses for covered items. We will not pay for the following:

1. Removal or installations charges.
2. Costs of initial technical adjustments (set-up), including adjustment of user controls or programming. These costs are the responsibility of the Kramer dealer from whom the product was purchased.
3. Shipping charges.

HOW YOU CAN GET WARRANTY SERVICE

1. To obtain service on you product, you must take or ship it prepaid to any authorized Kramer service center.
2. Whenever warranty service is required, the original dated invoice (or a copy) must be presented as proof of warranty coverage, and should be included in any shipment of the product. Please also include in any mailing a contact name, company, address, and a description of the problem(s).
3. For the name of the nearest Kramer authorized service center, consult your authorized dealer.

LIMITATION OF IMPLIED WARRANTIES

All implied warranties, including warranties of merchantability and fitness for a particular purpose, are limited in duration to the length of this warranty.

EXCLUSION OF DAMAGES

The liability of Kramer for any effective products is limited to the repair or replacement of the product at our option. Kramer shall not be liable for:

1. Damage to other property caused by defects in this product, damages based upon inconvenience, loss of use of the product, loss of time, commercial loss; or:
2. Any other damages, whether incidental, consequential or otherwise. Some countries may not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights, which vary from place to place.

NOTE: All products returned to Kramer for service must have prior approval. This may be obtained from your dealer.

This equipment has been tested to determine compliance with the requirements of:

EN-50081:	"Electromagnetic compatibility (EMC); generic emission standard. Part 1: Residential, commercial and light industry"
EN-50082:	"Electromagnetic compatibility (EMC) generic immunity standard. Part 1: Residential, commercial and light industry environment".
CFR-47:	FCC* Rules and Regulations: Part 15: “Radio frequency devices Subpart B Unintentional radiators”

CAUTION!

- Servicing the machines can only be done by an authorized Kramer technician. Any user who makes changes or modifications to the unit without the expressed approval of the manufacturer will void user authority to operate the equipment.
- Use the supplied DC power supply to feed power to the machine.
- Please use recommended interconnection cables to connect the machine to other components.

  * FCC and CE approved using STP cable (for twisted pair products)

For the latest information on our products and a list of Kramer distributors, visit our Web site www.kramerelectronics.com
where updates to this user manual may be found.
We welcome your questions, comments and feedback.

Safety Warning:
Disconnect the unit from the power supply before opening/servicing.

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